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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,661	07/17/2003	Andrew Harvey Barr	200308575-1	2056

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FORT COLLINS, CO 80527-2400

EXAMINER
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NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/621,661	BARR ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeremy C. Norris	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/10/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because the sectional views are not properly crosshatched (see MPEP 608.02). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled

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"Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,828,555 (Itoh).

Itoh discloses, referring to figures 2-4, a printed circuit board (30) comprising, a conductive layer (33), a via (44) transecting the conductive layer, and a pattern of conductive material (32) having a plurality of voids (46) in the conductive layer near the via [claim 1], wherein the pattern of conductive material is not electrically connect to the conductive layer (see col. 3, lines 20-40) [claim 8].

Claims 1-3, 6, 7, 9-13, 15-22, and 24-34 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2004/0188135 (Brodsky).

Brodsky discloses, referring to figures 1-4, a printed circuit board (100) comprising, a conductive layer (104), a via (204) transecting the conductive layer, and a pattern of conductive material (400) having a plurality of voids (402) in the conductive layer near the via [**claim 1**], wherein the pattern of conductive material is configured to maintain planarity of the printed circuit board (see paragraph [0032]) [**claim 2**], wherein the pattern of conductive material is configured to prevent settling of dielectric material in the printed circuit board near the via (see [0028]-[0030]) [**claim 3**], wherein the pattern of material is substantially circular in shape (see figure 5) [**claim 6**], wherein the pattern of conductive material is electrically connected to the conductive layer (see [0027]) [**claim 7**], wherein the conductive layer comprises either a power [**claim 9**] or ground [**claim 10**] plane (see [0031]), wherein the pattern comprises a symmetric pattern [**claim 11**], wherein the pattern comprises an asymmetric pattern (see figure 5) [**claim 12**], wherein the pattern comprises a concentric circles pattern (see figure 5) [**claim 13**], wherein the pattern comprises an arbitrary pattern [**claim 15**], wherein the pattern comprises a screen pattern [**claim 16**].

Additionally, Brodsky discloses, referring to figures 1-5, a printed circuit board (100) comprising, a conductive plane (104), a via signal barrel (204) transecting the conductive plane, and an anti-pad (500) having a pattern of conductive material (see [0038]) wherein a signal can not be transmitted between the conductive plane and the via signal barrel [**claim 17**], wherein the pattern of conductive material includes a plurality of voids (502) [**claims 18, 24**], wherein the anti-pad is configured to maintain planarity of the printed circuit board (see [0034]) [**claims 19, 26**], wherein the anti-pad is

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configured to minimize stray capacitance between the via and the conductive plane (see [0036]) [**claims 20, 27**], wherein the anti-pad is configured to prevent settling of dielectric material in the printed circuit board adjacent the via signal barrel (see [0037]) [**claim 21**], wherein the conductive plane comprises one of a power lane and a ground plane (see [0031]) [**claims 22, 25**], wherein the anti-pad is formed by removing conductive material from the conductive plane in a pattern (see [0038]) [**claim 28**], wherein removing conductive material is performed by using an etching process (see [0038]) [**claim 29**], wherein the pattern comprises one of a symmetric pattern and an asymmetric pattern [**claim 30**], wherein the pattern comprises a screen pattern [**claim 31**], wherein the pattern comprises one of an arbitrary and a random pattern [**claim 32**], wherein the anti-pad is substantially circular in shape [**claim 33**], wherein the via signal barrel is substantially circular in shape [**claim 34**].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brodsky.

Brodsky discloses the claimed invention as described above except Brodsky does not specifically state that the pattern comprises a radial spokes pattern [**claim 14**]. However, Brodsky teaches that the pattern can comprise various types of shapes (see [0036]). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to form the pattern to comprise a radial spokes pattern. The motivation for doing so would have been to aid current flow and provide preferred current paths (see [0036]).

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brodsky in view of Applicant's Admitted Prior Art disclosed with reference to lines 15-30 of page 1 of the instant specification (AAPA).

Brodsky discloses the claimed invention as described above except Brodsky does not specifically state that the via is configured for data transfer rates greater than

approximately 2 GHz [claim 4]. However, AAPA teaches that via data transfer rates greater than approximately 2 GHz are well known in the art. Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to configure the data transfer rates of the via in the invention of Brodsky to be greater than approximately 2 GHz. The motivation for doing so would have been to use a high speed data transfer rate, thus making the device faster and more efficient. Additionally, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to further modify the invention of Brodsky to configure the pattern of conductive material for data transfer rates greater than approximately 2 GHz [claim 5] since Brodsky teaches structuring the pattern so as to not significantly alter the signal integrity of the other layers [0036]. The motivation for doing so would have been to configure the conductive material to match the data transfer rate of the via and thus not significantly alter the signal integrity.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brodsky in view of US 6,329,603 (Japp).

Brodsky discloses the claimed invention as described above except Japp does not specifically state that the conductive plane comprises copper [claim 23]. However, it is well known in the art to use copper as the material for a ground plane as is evidenced by Japp (see col. 5, lines 5-25). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use copper as the material for the ground plane in the invention of Brodsky as is well known in the art and



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evidenced by Japp. The motivation for doing so would have been to use a material which is easily patterned with high electrical conductivity. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents disclose ground and power planes in PCBs.

US 5,315,069      Gebara,

US 6,710,258      Oggioni et al..

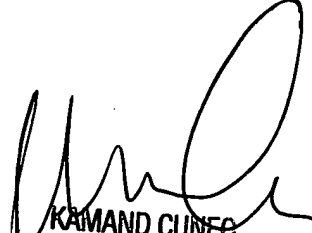
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCSN



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